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ROUTINE BACTERIOLOGICAL DETECTION OF GONOCOCCI IN A PUBLIC HEALTH LABORATORY

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The use of bacteriological methods for the detection of the gonococcus has become increasingly important during the past few years. This has been due not only to the impetus given by the army in its venereal disease control program, but in an even greater measure to the necessity of carefully controlled clinical response to the newer methods of therapy, the sulfonamide products and penicillin. In 1942 (1) The American Neisserian Society declared in its annual report that no claim for cure, from any source, should be given serious consideration unless supported by thorough cultural study. But thorough cultural study of the gonococcus is not without its difficulties. Nelson (2) in his article "The Present Status of Gonorrhea Control", published in the February, 1944, issue of the American Journal of Public Health, has summed up the situation in this way: "Culture of the gonococcus is a procedure which calls for

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Prize Award (third prize).
Presented at the Annual Meeting of the American Society of Medical Technologists, June 12, 1944, Chicago, Ill.

much training and experience. The experts do not yet agree upon which is the most satisfactory medium to use, and contamination and overgrowth by other organisms have not been adequately controlled. Unless a medium can be devised upon which the gonococcus can grow with the greatest of ease by the average bacteriologist it is unlikely that cultural service will ever become very rapidly available to the country at large."

With this in mind we are presenting this study in the hope that the information gained from our experiences in running some three thousand cultures during the past year and a half may be of some assistance to others in the culture of this organism. The routine which we have adopted after trying various procedures has been very satisfactory and has shown itself comparable in results obtained to that of other methods. It is a routine which we believe is practical, and can be adapted to most any size and type of laboratory, since it requires no elaborate equipment or media and for enrichment makes use of materials which are by-products in most laboratories.

Our laboratory is municipally owned and operated, though its services are not confined to the city limits, serving instead the metropolitan area comprising a population of at least 300,000. The material for this study comes pirncipally from these sources, namely: City Police Department, City Juvenile Court, Salvation Army Home and Hospital, Boarding Home Commission, the Cooperative Clinic for Venereal Disease Control, and a few specimens from the practice of private physicians. These sources represent a fair cross section of population and present most of the problems concerning the detection of this organism encountered by the bacteriologist in any laboratory, except perhaps the problem of shipping. The cases from the City Police Department and Juvenile Court are for the most part prostitutes, juvenile delinquents, contacts to cases in the armed forces, as well as some female patients arrested for drunkenness, disorderly conduct, and other offenses. Those from the Salvation Army Home and Hospital are prenatal cases, while those from the Boarding Home Commision are specimens taken from women applying for license to board and care for children in their homes and are taken as part of a required routine examination. The Tulsa Cooperative Clinic is, as the name implies, a clinic for the

control of venereal disease sponsored by the federal, state, and city governments and by the Tulsa County Medical Society. By far the largest number of our specimens comes from this clinic, and they include those from purely routine cases, contacts or suspected contacts of cases of gonorrhea, as well as for control of treatment and establishment of cure. The specimens from private physicians are for the most part for treatment control, only an occasional one being asked for as an aid in diagnosis.

Care in collection of specimens, important in all laboratory procedures, cannot be too strongly stressed in securing material for laboratory detection of the gonococcus. Dr. Pelouze (3) in a recent tour of the country sponsored by the United States Public Health Service in the interests of gonorrhea control was very emphatic on this point. He stated that any individual could carelessly or in ignorance thwart the efforts of the best bacteriologist. As regards collection of specimens the sources of the material mentioned above may be divided into two groups, those taken at the laboratory and those sent in from other parts of the city. Those from the Police Department, Juvenile Court, Salvation Army Home and Hospital, and the Boarding Home Commission are collected by laboratory personnel. We use the method of collection as described by Carpenter (4) (5), making cultures and smear preparations from both the cervix and urethra in the female. Our culture plates are taken into the examining room and planted directly by rolling the swabs over a small portion of the plate. After collection of specimens the plates are taken into the bacteriological laboratory and streaked with a platinum loop from the original "swab spots". The specimens from the Cooperative Clinic and those submitted from private physicians necessitated a different method of collection and transportation to the laboratory since it is not generally practicable to send out plates and risk their being handled improperly before, during and after collection of the specimens. Carpenter (5) has suggested collecting swabs from the cervix and urethra in tubes of proteose peptone No. 3 broth or ascitic fluid for delayed planting. Defibrinated horse blood with 1:30,000 gentian violet has been suggested by Cox, McDermott, and Mueller (6) as a collecting medium. Several other methods have been suggested, (7) (8) (9). The Oklahoma State Health Department when shipping specimens

from the rapid treatment hospital for venereal diseases at Rush Springs, uses the following procedure: plates are placed in containers and shipped by motor express to Rush Springs from their Oklahoma City Laboratory. Specimens are collected, plated and the plates returned to the container in which has been placed sufficient bicarbonate and acid to produce an adequate carbon dioxide tension. The container is then sealed and returned to the laboratory by motor express (10). None of these investigators feel that a completely satisfactory method has been evolved for shipping of cultures or for delayed planting for longer periods than 24 to 48 hours. Since the problem of shipping does not enter our work we have given no consideration to this problem and make no claims for our method of collection in this respect.

We wished to make use of a liquid medium for collection of specimens because we felt it had certain advantages. Carpenter (5) suggests the following advantages of using a liquid medium even when collecting at the laboratory where the material is to be plated: (a) It permits delayed inoculation when laboratory facilities are not immediately available; (b) it dilutes the inoculum thereby reducing overgrowth of the gonococcus with commensal organisms; and (c) it provides an increased amount of moisture to the surface of the solid medium. For our collecting medium we have made use of discarded sera from the serology laboratory. After each day's "run" of complement fixation and precipitation tests, the residual serum is salvaged, pooled and placed in the refrigerator. Sterilization of the serum is accomplished by filtration through a Seitz filter. The filtered serum is pipetted into sterile tubes in 0.3 c.c. amounts (this amount allows for not too much dilution of specimen but is sufficient to preserve the swabs in a moist condition for at least 24 hours after collection). The prepared tubes are fitted with rubber stoppers above cotton plugs and incubated for sterility before use. By filtering 100 c.c. or more at one time, the sterile serum may be stored in the refrigerator and collection tubes made up as needed. Since we make further use of sterile serum in our plate media it is an advantage to maintain an extra supply. It seems entirely reasonable to assume that hospital laboratories who maintain blood or plasma banks might make use of plasma in the same way we have used serum. After pooling plasma, that which remains in the con-

tainers could be transferred under aseptic conditions to tubes or to storage bottles, thus obviating the need for sterilization by filtration.

The serum collecting tubes are sent out for all specimens collected away from the laboratory. Swabs from the urethral discharge in the male or from the urethra and cervix in the female are taken with sterile swabs, placed in the tubes, the cotton plugs replaced and the tubes returned to the laboratory. Swabs from both cervix and urethra are placed in the same tube as suggested by Mahoney (11). These specimens may reach the laboratory within a half hour to as long as twelve hours after collection, some specimens taken after laboratory hours being held overnight before planting. The specimens from collection tubes are planted in the same manner as the direct cultures, namely, by rolling the swabs on a small area of the plate and then streaking from this area with a platinum loop. We have checked the length of time the gonococci remain viable in the original collecting tubes by returning the swabs to such tubes after the initial planting, placing the tubes in the refrigerator, and replanting on successive days. In a majority of cases we have been able to recover the organisms after 24 hours, but were unable to obtain positive cultures after as much as 48 hours. That the gonococci will remain viable in these serum collection tubes for 24 hours in most cases should make this method of collection applicable in hospital laboratories in which specimens collected by internes could be brought to the laboratory for delayed planting, or might well be used in commercial laboratories whenever specimens are to be collected away from the laboratory.

The medium which we use for plates is the usual proteose peptone No. 3 agar base, enriched with hemoglobin. Double strength agar is prepared in this laboratory as follows: Proteose peptone No. 3, 40 gms.; disodium phosphate, 10 gms.; sodium chloride, 10 gms.; dextrose 1 gm.; and agar, 35 gms. These substances are weighed and placed in one container with 1000 c.c. distilled water. Complete solution of the agar and other substances is brought about by heating in a double boiler, water bath or flowing steam in the autoclave. There is no need to adjust the pH of this medium. After solution is effected the medium is dispensed in 100 c.c. lots for convenient use and storage. In smaller laboratories where fewer

plates are needed each day, it may of course be dispensed in smaller amounts. The hemoglobin solutions are dispensed in the same amounts as the agar base so that they may be mixed in equal parts when ready to use. We have used Difco dehydrated hemoglobin, 2% solution, and found it very satisfactory. When the Difco product is not on hand we use hemoglobin prepared from the discarded cells of plasma bottles and find it equally efficacious in the culture of these organisms, simple to prepare and of course economical. We prepare the solution by laking the packed cells in distilled water and sterilizing in usual manner. We have tried solutions of 2%, 5% and 7½% packed cells, and found that solutions of approximately 5% packed cells made the better appearing plates and supported growth of the gonococcus nicely. While hemoglobin agar prepared in either of the above methods supports growth of most strains of the gonococcus on primary culture it has been shown by Lankford and others (12) that certain strains of the organism require additional nutritive factors, factors which are destroyed by autoclaving. They found these strains to occur in considerable frequency so that failure to detect them constitutes a serious defect in cultural diagnosis. That certain other bacteria growing on the plate supplied this factor was shown by the appearance of halos of gonococcus colonies sometimes found around these colonies. They found the substance present in fresh extracts of liver, yeast, blood and similar substances, but it was not replaceable by a number of pure nutriles such as calcium pantothenate, pyridoxin, thiamin, a yeast nucleic acid preparation, xanthin, nicotinic acid, etc. Since it had been our observation that many cultures, of gonococci particularly those from treated cases, grow with relatively few other organisms present, we felt that it might be advantageous to add some substance to the autoclaved media. To supply this nutritive factor and since the factor had been demonstrated in blood and serum (12), we have again made use of our filtered human serum. We tried plates made with different percentages of serum and plates containing no serum using pure cultures of gonococci as well as streaking these same types of plates with exudate from known cases of gonorrhea in the male. A marked difference was noted in the size and number of colonies on these plates, the colonies being much larger and usually more numerous on the serum containing media.

Occasional strains of gonococci did not grow at all on the plates containing no serum. Amounts of serum sufficient to make a final 2% concentration are added to the melted cooled agar or to the hemoglobin solution just prior to mixing and pouring the plates.

Identification of the gonococcus colonies are made after 48 hours' incubation routinely by the use of the usual indicator, dimethyl phenylene diamine hydrochloride. "Oxidase positive" cultures are picked, smears made and stained by Gram's stain using Hucker's modification, and examined for gram negative diplococci. As has been the experience of all persons working with these cultures we have found several other organisms giving a postive oxidase test. We have found certain strains of streptococci and staphylococci giving this reaction and quite frequently colonies of small gram negative bacilli. Final differentiation of the gonococcus from the other members of the Neisseria group is made by subculture of picked colonies into tubes of dextrose, lactose, maltose and saccharose semi-solid agar. Since our experience with subcultures of the gonococcus on sugar media frequently suggested in the literature was far from satisfactory, we have made use of a modification of dextrose starch gelatin agar, recommended as a propagation media for this organism. The medium as modified consists of .1% proteose peptone No. 3, 0.5% soluble starch, 0.5% sodium chloride, 1% gelatin and 0.3% agar to which is added 1% of the desired sugar plus the indicator, phenol red. We have had no failures in subculture with this medium.

Using the routine and media described above, we have "run" 2,525 cultures during 1943 and the first four months of 1944 from which a total of 455 positive cultures were obtained. Of the total number of cultures, smears were submitted or taken on the same patient at the same time in 869 instances. Of this number 234 were positive by smear or culture; 135 by culture only and 29 by smear only; and 70 by both smear and culture. Thus of the total positives in this group, 57% were positive by culture only, 12½% by smear only. Or expressing the total number of positives in another manner, 205 were positive by culture and 99 by smears or slightly more than twice as many were found positive on cultures as by smears. This compares favorably with results by other workers using other methods (13) (14). As suggested by Reid (13) we have observed

that cases appearing for first examination may have both positive smears and cultures, but when these patients are placed under treatment, smears become negative while cultures may remain positive for some time. The apparent discrepancy in total number of cultures reported and the number in which smears were submitted at the same time is accounted for by the practice of the venereal clinic of using only cultures in treatment control. The not infrequent finding of typical appearing intracellular diplococci in smears, with negative results from cultures is apparently in line with results obtained by all who have worked with the organism. It emphasizes the desirability of doing both smears and cultures routinely, particularly for diagnosis.

We feel that a routine such as we have described is practical and may be successfully applied to the culture of the gonococcus by the average bacteriologist with results comparable to those obtained by using other media with a minimum of equipment and expense.

Summary

A routine method of culturing the gonococcus has been described using human hemoglobin and human serum as enrichment materials. A simple technique which permits holding material for delayed culture has also been described. This routine may be adapted for use in any size or type of laboratory.

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IMPORTANCE OF LABORATORY METHODS IN THE DIAGNOSIS OF FUNGUS DISEASES*

By PETER MARCUSE, M.D., *Houston, Texas.*

The diagnosis of fungus diseases often presents a difficult task to the physician, and in many instances the problem cannot be solved without the help of the laboratory. There is good reason to believe that many cases of fungus disease are not recognized as such because the organisms are overlooked or not correctly identified. It is not the purpose of this paper to give in detail all the steps in the identification of the various fungi but rather to point out a few methods that can be applied routinely in the majority of cases.

The wet hydroxide preparation is a most valuable help in the detection of fungus infections since many of the characteristic forms fail to show up well in stained smears. The method consists of mixing a small quantity of the material to be examined on a glass slide with a drop of a 20—30% solution of sodium or potassium hydroxide. A coverslip is then applied and after about 5 minutes the preparation is examined microscopically under subdued light. This procedure alone will usually be sufficient to establish the presence of fungi in skin lesions, such as *Trichophyton, Epidermophyton,* etc., and it will also demonstrate the characteristic forms in sputum or pus in most of the internal fungus diseases.

Ordinarily, the demonstration of a fungus in the wet mount will have to be substantiated by other laboratory methods in order to make the diagnosis definite. Culture and animal inoculation are among the most important ones of these procedures. Whenever pus is available we have found it very helpful to fix small portions of the exudate in formalin. This material is then embedded in paraffin and sections are made in the same manner as from a tissue speci-

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men and stained with hematoxylin-eosin as well as by other suitable methods.

In the fungus infections that are limited to the skin the material to be examined is readily available in the form of scrapings from the lesions. A more difficult problem, however, is presented to the laboratory worker when the changes are of internal nature. The organs most frequently involved in such cases are the lungs, lymph-nodes, bones and meninges, and the material available for examination is usually sputum or pus. Diseases of this type are caused by *Blastomyces, Actinomyces, Coccidioides immitis, Torula, Monilia, Sporothrix* and *Aspergillus.*

The following two cases may serve to illustrate the demonstration of fungi in two instances in which their presence had not been suspected on clinical grounds.

In the first case the patient complained of a chronic cough and of weight loss. Pulmonary tuberculosis was strongly suspected, but repeated smears from the sputum were negative for acid fast organisms. The sputum was then sent to the laboratory almost every day with the request to examine it for the presence of tumor cells. In one of these specimens a small sulfur-yellow particle was found. In the wet mount it showed the characteristic morphology of the sulfur granule of actinomycosis. The coverslip was then removed and the preparation dried and stained with Gram's method. After this the granule no longer showed its typical appearance, but it could be seen that the periphery was Gram-negative and the center, Gram-positive. A few days later some pus was obtained from an abscess in the patient's chest wall containing a large amount of yellow particles. Small quantities of this material were placed on pieces of filter paper, fixed in formalin, and then embedded, sectioned, and stained. The sections, prepared by Krajian's method[1] for staining Gram-positive and Gram-negative organisms, showed beautiful pictures of typical actinomyces granules with a dark blue mycelium in the center and light red clubs in the periphery. Several of the particles were removed from the pus under sterile precautions and crushed in a small amount of saline. This material was then used to inoculate tubes of Sabouraud's agar and also blood agar

[1] Krajian, A. A.: J. Lab. & Clin. Med. 28, 1602, 1943.

plates. Cultures were obtained under aerobic conditions in the form of round plaques with light gray, finely granular surfaces. Microscopically the colonies were found to consist of fine, non-septate, branching hyphae. On the basis of these findings a diagnosis of pulmonary actinomycosis was made.

In the second case[2] the patient was admitted with large abscesses over the scalp, the shoulders, the chest wall and the hips. Routine smears from the pus showed only a few mixed organisms. Wet potassium hydroxide mounts presented large numbers of round organisms varying considerably in diameter and having a double contoured, refractile capsule. Cultures were readily obtained on blood agar, Sabouraud's medium, and Russel's double sugar medium. The colonies had a fluffy white appearance which later turned to grayish-brown. These findings were considered sufficient to warrant a diagnosis of coccidioidal granuloma which was confirmed by autopsy.

The causative organism in this instance was *Coccidioides immitis*, a fungus which has a double cycle of growth. In the diseased tissue as well as in the exudate, the organism exists in the form of the sporangium, a spherical body containing numerous endospores showing a double contoured, refractile capsule. When grown on artificial media, however, the fungus develops into a mycelium with branched, septate hyphae. *Coccidioides immitis* always varies considerably in diameter, from 5—60 or more micra, and multiples by means of endosporulation but not by budding. The important initial step in the diagnosis is the demonstration of the spherical bodies with their double contoured capsule in pus or sputum.

Variation in size and absence of budding forms both have to be evident in order to avoid confusion with blastomyces, which also possesses a refractile capsule. The morphology can usually be satisfactorily observed in wet preparations. For detailed study, however, it is desirable to stain the organism in smears or in sections from the pus. Hematoxylin-eosin, and especially Mallory's eosin-methylene blue, are suitable stains for this purpose.

If the typical morphological characteristics of the organism cannot be demonstrated beyond any doubt, diagnosis will have to be

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[2] Marcuse, P. and Karotkin, L.: Texas State J. Med. 39, 534, 1944.

substantiated by animal experiments. In handling the culture of the fungus, the laboratory worker should be aware of the danger of infection.

The two cases here described clearly show the importance of the laboratory findings in aiding the clinician to diagnose fungus diseases. These instances also demonstrate the significance of the wet hydroxide mount. By including this procedure as a step in the routine examination of sputum or inflammatory exudates, the medical technologist will avoid the danger of overlooking fungi in most cases. It will at least serve to establish a tentative diagnosis of fungus infection, and the organism can then be identified by additional methods.

It should be emphasized that the presence of a fungus does not always imply that this organism is the primary cause of the patient's condition. In the first place, the infection may only be secondary to some other disease process. Aspergillus, for instance, will occasionally settle in a lung that is the site of tuberculosis. On the other hand, fungi are sometimes present without apparently causing any disturbance whatsoever. Ray fungi, very similar to, if not identical with, actinomyces, may be found in the throats of healthy persons. *Monilia albicans* can cause a superficial inflammation in the mucus membranes of the mouth and from there may contaminate the sputum, thus giving rise to the erroneous suspicion of monilia infection of the lung. The sputum should, therefore, be collected after thorough rinsing of the mouth with some disinfectant.

Though the technologist should be aware of these pitfalls in diagnosis, he should nevertheless establish and report the presence of fungi in any sputum or exudate.

MEDICAL PIONEERS IN THE PERUVIAN AMAZON

By DR. EDWARD A. WESTPHAL

Chief of U. S. Health and Sanitation Mission in Peru

Beyond the lofty ranges of the Andes Mountains, in the upper reaches of South America's vast Amazon basin, is one of the last great primitive frontiers of economic development in the Western Hemisphere. Here the second World War, with its insatiable demand for strategic materials, has given new impulse to regional development. In the forests and valleys sloping down to the Amazon lowlands are valuable resources of rubber, hardwoods, cinchona. Fertile stretches of land are adapted to tropical and semi-tropical agriculture. Oil has been discovered in this trans-Andean region. The Ganso Azul field south of Pucallpa, Peru, already is helping to supply the area's petroleum needs. The montana region, as it is popularly called in Peru, is on its way up economically.

For centuries, while other areas of the Americas moved forward in economic development, the upper Amazon region remained almost untouched. On one side the towering Andes walled it from access to world markets by way of the Pacific. And between the montana and the Atlantic lay more than 2,000 miles of tropical jungle, impenetrable to commerce except by navigation on the Amazon and its tributaries. Now the airplane has opened fast routes of communication. In addition, Peru is pushing penetration roads over the Andes. The spectacular Central Highway has been virtually completed from Lima to Pucallpa. Other penetration roads are under way or projected to the North and South. Agricultural experiment work proceeds with colonization. The pioneering settler finds in this Amazon country the promise of a new frontier which responds to the productivity of human labor, transportation and machinery.

And, in the vanguard of the pioneering work in the Peruvian Amazon, are doctors and sanitary engineers, applying modern medical techniques to the task of making the jungle country healthful and productive. Modern health work in the montana region has been expanded greatly in the last two years, as part of inter-American cooperation in health and sanitation activity. Peruvian doctors and engineers are working with doctors and engineers from the United States to increase the productivity of the Amazon country and improve the jungle environment for human habitation.

Peru was one of the first of the other Americas to join with the United States in cooperative health and sanitation work recommended by the Rio de Janeiro conference of American foreign ministers in 1942. Health and sanitation measures in Peru's trans-Andean region were undertaken in recognition of the potential importance of the area in expanding hemisphere production of tropical-grown materials, such as quinine and rotenone, as well as in its potential long-range value to the development of Peruvian economic resources. Development work in the Peruvian Amazon, including the health and sanitation program, is Peru's counterpart of similar development being carried out in the huge Amazon basin by Brazil, Bolivia, Ecuador and Colombia. In the health work, particularly, inter-American cooperation plays a timely role in aiding the development of hemisphere resources.

The health program in Peru, like that in most of the other eighteen countries participating in the inter-American health and sanitation activity, is carried on by a special cooperative service organized as an agency of the Peruvian Government. This special agency is known as the Servicio Cooperativo Inter-Americano de Salud Publica, better known in Peru as the SCISP. The SCISP is an agency of the Peruvian Ministry of Health. The original agreement, signed in July, 1942, called for a two-year health program costing $1,000,000. This agreement has been extended over a five-year period, involving total projected expenditure of $3,000,000. To date the Institute of Inter-American Affairs has contributed $1,850,000 and the Peruvian Government $672,000 in cash, together with personnel, services and facilities equivalent to an additional $200,000.

Fourteen United States specialists, mostly specialists in tropical

medicine and sanitary engineers, have been assigned to assist the SCISP by the Institute of Inter-American Affairs. The majority of the personnel are Peruvians. Nearly 800 Peruvian nationals are at work on SCISP's projects and in the administrative forces. Of these about 100 are professional personnel, including doctors, sanitary engineers, nurses, sanitary inspectors, nurses' aides and laboratory technicians.

When SCISP was created, it was charged by the Peruvian Government with the tasks of planning, organizing and putting into operation a medical program in Peru's upper Amazon region. Certainly this was no small job. Despite considerable progress in opening air transport routes and highways over the Andes, communications were extremely difficult by comparison with more developed areas. SCISP doctors and engineers had to become accustomed to travel by foot and mule back, canoes and rafts on the rivers, in addition to airplane flights over uncharted jungles.

Still more troublesome was the problem of transportating materials and equipment for construction of hospitals and dispensaries. When SCISP began work in 1942, the Trans-Andean Highway to Pucallpa was incomplete. The submarine menace in the Caribbean and the South Atlantic was at its height. Peru's biggest Amazon trading city, Iquitos, is about 1200 miles up the Amazon from the Atlantic. Ordinarily heavy materials and equipment move into the upper Amazon by way of the Amazon from the Atlantic. With shipping scarce, however, it was necessary to transport materials over the mountains to Tingo Maria or to the Aguaytia River from Lima, thence to Yurimaguas or Pucallpa on rafts and by river steamer to Iquitos. A shipment sent in this fashion took from three to six months to arrive and part of the goods were damaged or lost. In the construction of the Yurimaguas Hospital many materials were shipped down the rapid-filled Huallaga River from Tingo Maria. Nearly 50 per cent of materials shipped in this way were lost. Two raftsmen were drowned. But there was no other way of shipping at the time.

Now all materials are shipped by boat from Lima up the Pacific via the Panama Canal, to Iquitos, a distance of 10,000 miles, and then from Iquitos they are reshipped on river steamers to their destination. During the dry season supplies can be sent over the

Nurse Elizabeth Shinker reaches for pills as Dr. Jaurequi treats youngster at Tamshiyacu.

Dr. Jaurequi talks to mother holding ill youngster, at Tamshiyacu.

Pucallpa road as far as Pucallpa, then by river boat to Iquitos.

The program of medical assistance and preventive medicine being carried on out in the jungle was the result of preliminary surveys and conversations with the officials of the Ministry of Health. In agreement with them, the following program was devised:

1. The construction and operation of combined hospitals and health centers in the larger and more strategically located cities.
2. The establishment of medical dispensaries in the smaller towns and villages.
3. The establishment of sanitary posts in the smaller settlements where a dispensary under the care of a physician was not economically feasible.
4. Setting up of a system of mobile units to render the same services to the population sparsely settled along the highways and rivers.

The center of this work is the city of Iquitos, a product of the rubber boom of the last century and once again a flourishing city of 50,000 inhabitants. The shipping and commercial center of the entire area, Iquitos is located on the Amazon River, just below the union of the Ucayali and Maranon Rivers. Here the SCISP is constructing an addition to a small and inadequate existing hospital. The addition, which is larger than the old hospital, will supply this institution with 88 beds additional, and facilities for surgery, X-ray work, laboratory work, out-patient department, administration building, and kitchen and dining rooms. The SCISP also has been operating a general out-patient clinic for indigents in Iquitos where about 4,000 patients are treated and supplied with medicines monthly.

The SCISP placed in operation in Iquitos a health center in which emphasis is placed on preventive medicine work. This unit treats about 3,000 persons monthly. By preventive medicine is meant the treatment of transmissible diseases, such as malaria, tuberculosis, syphilis and hookworm, and searching out, treating and following up cases to eliminate carriers. This work also includes vaccinating against childhood diseases, typhoid, yellow fever, etc.; orienting mothers in the care and feeding of infants and children; instructing pregnant mothers in the care of themselves; educating

the public to a knowledge of what constitutes good health and how to achieve it.

Iquitos is a training center for health workers. Courses in public health are given to new physicians entering the SCISP. Here, too, are trained sanitary inspectors who man Sanitary Posts. Visiting nurses are trained for health centers and nurses' aides for hospital work. Trainees from these courses are already in service at Pucallpa, Yurimaguas and Tingo Maria hospitals, all built by the SCISP.

Other hospitals have been or are being built in San Martin and Satipo. Hospitalization, out-patient medical care, preventive medicine and health education generally are carried out in these hospitals. They have an average capacity for forty in-patients each and out-patient faciliites. Built in towns with limited living and sanitary facilities, they must furnish living quarters for doctors, nurses and practically the entire hospital staff. They also have water supply, electric light and sewer disposal plants.

Locations were chosen so that these hospitals could serve as large an area as possible. Tingo Maria Hospital is in the most successful and rapidly expanding colonization project in Peru. It is the site of an important agricultural experimental station. Rubber and cinchona plantations are being developed in the area. Other important products of the area are tea, barbasco and lumber.

Pucallpa Hospital is located on the terminal of the Central Highway from Lima over the Andes to Huanuco, Tingo Maria and Pucallpa. It is an increasingly busy shipping point. Freight now is shipped over the road to Pucallpa and from there down the Ucayali to Iquitos by river boat. Pucallpa promises to become more important commercially when the highway is completed for all-year traffic. From Pucallpa, the upper Ucayali and much of the Urubamba River can be given medical attention. Moreover, Pucallpa is a station on air routes from San Ramon to Iquitos and Puerto Maldonado. The newly-built highway has been a boon to the area.

Yurimaguas Hospital is located on the Huallaga River, on an important stop on the Chiclayo-Iquitos air line. The town is a large insecticide producing and shipping center. From it, the Huallaga River area below Tingo Maria receives medical care.

San Martin Hospital is built in one of the largest Peruvian Amazon jungle towns. The town has 8,000 inhabitants and 10,000 more in the immediate vicinity. It is the center of a tobacco and coffee growing area. From San Martin medical services for much of the Department of San Martin will be supplied. The San Martin and Yurimaguas region is due for further development when the highway to Bella Vista, on the Maranon River, is completed and extended to Yurimaguas and San Martin.

Satipo Hospital is in a colonization area second in importance only to Tingo Maria. It also has an agricultural experimental station. Progress of the town has been retarded by the prevalence of malaria but has taken a decided upsurge with the establishment of a clinic, the construction of the hospital and the introduction of malaria control measures. Many colonists have moved into the area. Satipo produces cinchona, tea, tobacco, lumber, insecticides and other tropical products.

Each hospital treats on an average of more than 2,000 patients a month in the out-patient clinic. The in-patient beds are always filled. A staff of 30 or 35 is required to operate one of them.

Next in line in the chain of SCISP Amazon medical services are the dispensaries. These units are staffed by a physician, usually have a bed capacity for ten in-patients and do the same general work as is done in the larger hospitals. They are located in smaller towns and fill in gaps between the hospitals. They send their surgical patients to the nearest hospital. The SCISP has constructed dispensaries at Caballococha, in a rubber-producing section on the Amazon below Iquitos; at Gontamana, on the Ucayali between Pucallpa and Iquitos, near which oil deposits are being developed; at Barranca, on the Maranon River above Iquitos. Other units are at Borja, on the navigable headwaters of the Maranon and terminal of a new highway under construction over the Andes; and at Requena, on the Ucayali, the center of another rubber area. In addition, the SCISP is operating dispensaries in rented facilities at Puerto Maldonado and Satipo.

Next are Dispensary Posts. These are under the care of a Sanitary Inspector, trained by the SCISP in Iquitos. They are located in villages where it is impractical to place a physician. The inspectors devote themselves mostly to rural educational work in

preventive medicine and in the improvement of local sanitary conditions. They treat common local diseases and collect cases they are not able to treat for the regular visit of dispensary launches. The work of these Sanitary Inspectors is supervised by the physician in charge of the dispensary launch for the area. The launch supplies them with medicines. The inspectors are responsible for a section of river up to the area of the next Sanitary Inspector. They travel by canoe. The SCISP has 27 sanitary posts, including 12 on the Ucayali River, two on the Huallaga River, three on the highway between Tingo Maria and Pucallpa, one in the Madre de Dios area, one in Satipo area, two on the Amazon, three on the Maranon.

Last in the chain of medical services are the dispensary launches and mobile units on wheels. These perform the same functions as the other units but serve the more sparsely settled river population. Three launches are in operation. The launches make regular trips on the Amazon, Maranon outboard craft, permitting them to look after nearby areas. A wheeled unit operates on the highway between Tingo Maria and Pucallpa, treating colonists, highway, rubber and cinchona workers.

So much for the jungle proper. Several months after its creation, the SCISP also was assigned the job of carrying out the sanitation of Chimbote, an extremely malarious port north of Lima where harbor installations and industrial works are in progress. Here the SCISP is draining malaria swamps, installing a water supply and distribution system, building sewage disposal facilities and building a hospital and health center.

Specially trained personnel are needed for SCISP projects. For training of physicians in preventive medicine and of visiting public health nurses, the SCISP is building a health center in the Rimac District of Lima. This center also will serve as a demonstration unit. The SCISP, through the Institute of Inter-American Affairs, is sending doctors, nurses and engineers to the United States for public health training. Seven physicians, two nurses, two sanitary engineers and one public health educator have been sent for training in United States universities. They are committed to continue working for the SCISP after their return to Peru.

Contrary to what many people believe, the jungle is not an unhealthful place. With a little knowledge and proper precautions,

one may live quite healthfully in the jungle. Treatment of disease is but a small part of the work necessary to make the Amazon jungle healthful for economic development. Disease treatment is only a palliative. The health work aims mainly at the elimination of disease at its source. This means that each hospital and dispensary must be a center from which the community is educated in the prevention of disease and for control measures designed to eliminate such disease carriers as mosquitoes, flies, contaminated water.

The most common and harmful disease of the jungles is intestinal parasitosis, chiefly hookworm. In surveys we have found that at least 95 per cent of the patients suffer from intestinal parasitosis. This is due to the lack of toilet facilities and non-use of shoes. Hookworm is transmitted by stepping on contaminated soil. Children suffering from hookworm are thin and pale and pot-bellied. Many die from enemies. Much educational work needs to be done before hookworm is controlled.

Other common diseases are malaria, tuberculosis, yaws, tropical ulcers, venereal diseases, leprosy and leishmaniasis. Most of these can be prevented by proper precautionary measures and knowledge. Most of the jungle inhabitants are undernourished, making them easy prey to disease. They live on a salted dry fish called "Paiche", yuccas (manioc root) and bananas. They need to be taught to eat properly but changing dietary habits is difficult.

In Tingo Maria people at first were unfamiliar with the health program. Now there is a marked change. Privies and safe wells for drinking water are being built. More children are wearing shoes. The general health level is rising. Tropical ulcer and leishamania have almost disappeared. The same is happening in varying degrees in other localites. Satipo has many new colonists moving in as malaria decreases. The hospital inspires a feeling of security. We like to think that the increased tempo of progress is in part, at least, due to the hospitals and the improved sanitation.

The work by the SCISP is but a small fraction of that being done by the Ministry of Health in Peru. The SCISP is temporary and is dedicated only to the jungle and to Chimbote. An indication of the increasing amount of over-all health work being done by the

Health Ministry can be found in its budget. In five years this has increased from around 3,000,000 soles to more than 20,000,000 soles.

What is being done in the jungle is but a beginning, adapted to local conditions and the economic means available. More needs to be done before the Amazon area, with its potential riches, becomes completely safe for economic development. But the hemispheric cooperative health program started by the Rio conference provides a basis for expansion of the work and a beacon for the future in Amazon development.

MYCOBACTERIUM TUBERCULOSIS RECOVERED BY GASTRIC LAVAGE*

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The use of the gastric lavage as an aid in diagnosing tuberculosis in children is being employed more generally each year as additional reports confirm its value. A survey of the literature reveals that very few reports have been published on children with tuberculosis of the bone and joints. Therefore, my problem has been:

1. To examine the gastric lavage of children with bone and joint tuberculosis in the Illinois Surgical Institute for Children.
2. To make a positive diagnosis of tuberculosis in as short a time as possible using both guinea pig inoculations and culture methods.

The number of children in this institution was too few for statistical data to evaluate the technique so that in addition the same technique was employed on consecutive admissions in the tuberculous ward of the Children's Hospital of Cook County and also on a few cases from the department of pediatrics of the Illinois Research Hospital.

History

The goal of research workers interested in diagnosing tuberculosis has been to develop a method whereby the presence of the Mycobacterium tuberculosis may be definitely demonstrated in the shortest possible time.

Various lines of experimentation** have resulted in: (1) new

*Taken from a thesis submitted by the author in partial fulfillment of the requirements for the degree of Master of Science in the Graduate School of the University of Illinois.

**Complete bibliography on any of these procedures may be obtained by writing the author.

staining procedures; (2) new methods of concentrating the material; (3) further development in the use and preparation of various culture media; (4) modifications and new technique in animal inoculation; and (5) comparisons and criticisms of these different methods of study. Attempts have also been made to find a practical usable method in the field of serology.

Meunier (1) in 1898 was the first to report the use of the gastric lavage in the diagnosis for tuberculosis in children. He had unsuccessfully employed the methods used by Kaufman (2) in 1892, whereby the posterior part of the pharynx was examined by the aid of a catheter. He also attempted to repeat a method used by some veterinarians who examined the mucous membrane by sponging the esophagus of tuberculous cattle. In Meunier's first report the stomach contents were aspirated early in the morning before eating. The sediment after centrifugation was stained and examined for acid fast organisms. In 27 examinations of 17 cases Meunier reported positive findings in 29.4 per cent. Unfortunately, his method was forgotten for thirty years.

Armand-DeLille (3) revived the technique of the gastric lavage examination. Armand-DeLille modified the original method by concentrating the material before examination. In a comparison of this method with the Meunier method Armand-DeLille and his coworkers reported that in 62 cases the direct smear examined without hemogenization gave positive results in 10.7 per cent of the smears, in contrast to 31 per cent positive in 110 cases after concentration was employed. Armand-DeLille maintained the gastric lavage was an easy method and the only means (together with x-ray examination) of confirming the tuberculous nature of some lung conditions in infants.

Armand-DeLille's gratifying results gave an impetus to the use of the gastric lavage and the literature* reveals reports from most every country.

Method

The method employed in exploration of the problems follows. The gastric lavage was obtained from a fasting stomach. A sterile Levine tube was introduced into the stomach and contents aspirated by using a sterile 20 cc. syringe. This was centrifugated at high

speed and a smear made from the sediment. The sediment was divided and half was concentrated by digesting with 4 per cent sodium hydroxide for forty-five minutes. This was then recentrifugated and neutralized with 3 per cent hydrochloric acid. Cultures were made on modified Petragnani medium (4), modified Guearnon (5) and Herrold's egg yolk media (6). The three media were used as we were desirous of perhaps finding one medium more conducive to growth in comparison with the others.

The remaining sediment was inoculated intracutaneously into the side of a guinea pig in the manner described by Woolsey in 1939 (7). A guinea pig which had been previously tuberculin tested was shaved on one side of the abdomen. About 0.4 cc. of the sediment of the gastric lavage was introduced intracutaneously. Care was taken in using the untreated specimen to avoid puncturing the peritoneum. There is a secondary infection that will occur in the small bleb that is formed. This will drain for a few days and then heal.

Smears are made from the draining sinus in seven to ten days and stained for the presence of acid fast rods. After the site of inoculation has healed, a small nodule is formed in the guinea pigs that are positive for the tubercle bacillus. The nodule is incised and smears are made and examined for the presence of Mycobacterium tuberculosis.

Occasionally in very positive pigs the site of inoculation does not entirely heal and there is formed a crater-like nodule which is more easily found positive on smear.

If the first smear was negative, repeated weekly smears were made until the acid fast organism was found. When found, a preliminary report may be made here. This report may be verified at the autopsy of the guinea pig. The guinea pig is killed when the inguinal lymph nodes have formed on the side of the injection. Smears are made from the inguinal nodes for acid fast rods and the confirmatory report is given.

The pigs were not isolated. There were usually three or four in one cage. There was no evidence of one animal infecting another as in no instance was there a positive animal found that did not reveal acid fast rods at the site of inoculation even though the nodule

was very small and did not become positive for a period of thirty days.

Two hundred and seventy-three gastric lavages were examined on 125 children, one hundred of whom were tuberculous in one form or another. Ninety lavages were found to have acid fast organisms. This represents fifty-two children.

The direct smears of the gastric sediment were stained by the Ziehl Nielsen method and were carefully examined. Four of the two hundred and seventy-three smears contained acid fast organisms. The corresponding cultures and guinea pigs for these four specimens revealed the presence of the tubercle bacilli in a much shorter period of time than the average twenty days. One of these cases was a known miliary tuberculosis; the direct smear of the sediment of the gastric lavage contained many acid fast bacilli. Furthermore the culture and the smear from the site of inoculation on the guinea pig revealed acid fast bacilli in seven days.

In several cases when the guinea pig required four weeks or more before revealing the tubercle bacilli at the site of inoculation, the corresponding cultures were scraped and smeared. Some of these smears from the scrapings were found to have acid fast rods, although there was no visible growth. For this reason it was decided to scrape all cultures and stain for the presence of acid fast bacilli before discarding the cultures as negative. Acid fast organisms were found on two cultures which were scraped, yet the corresponding guinea pigs were negative at the site of injection and at autopsy.

The three types of media used compared favorably. After seventy-five cultures were made of the modified Guearnon, Herrold's and modified Petragnani, the use of the modified Guearnon was discontinued and only the modified Petragnani and Herrold's media were employed.

The original Petragnani medium had produced such excellent results in previous work that this was compared with the modified method before the lavage study was begun. Since the results were comparable, the modification was employed because the preparation is much simpler.

The inhibitory dye in Petragnani's was advantageous. More con-

tamination was found on Herrold's medium than on Petragnani's medium. However, the rate of growth of the acid fast bacilli was about equal on the two media.

The intracutaneous method of inoculating a guinea pig with tuberculous material is very satisfactory when using stomach contents. In one case the material was very tenacious and concentration was done before the inoculation, but no difficulty was found in the other specimens. The tenacious specimen did raise the question of the efficacy of this method with heavy sputums.

Using the intracutaneous method, a positive preliminary report of the presence of acid fast organisms was given in from six to thirty days.

Four guinea pigs died prematurely evidently from a secondary infection. Three of these, however, were inoculated from material from the same patient and all died on the tenth day after inoculation. The culture from this patient revealed no acid fast bacilli.

Of the ninety gastric lavages that were positive for the tubercle bacilli, forty-five were positive both by guinea pig inoculation and culture. Twenty-four were positive by guinea pig only with no growth on any culture. Ten were positive by culture only when the cultures were scraped as no visible growth was seen.

Eleven specimens were positive on culture only; no guinea pigs were employed.

Children under three years of age rarely gave evidence of production of sputum. It is in these children who were tuberculin positive that the acid fast organisms were often found. Rosencrantz and Hurwitz (8) reported in their series of examinations on 167 tuberculin positive children that all children under one year were found to have acid fast organisms in their stomach content. In this series of children 46 of the 145 were under three years. This included five of the controls. Sixty-six per cent of these revealed acid fast organisms in their gastric lavage.

It was planned to examine three lavages on every child but unfortunately this could not be done on all cases. Often the child was transferred to another hospital before the second or third lavage was obtained.

The results indicated the advisability of repeated lavage. Only

eleven of the fifty-two positive children were positive to guinea pig inoculation or cultures in three out of three examinations. Nine of the fifty-two were positive in one examination.

Summary

1. Two hundred seventy-three gastric lavages were examined representing one hundred twenty-five children, one hundred of whom were tuberculous in one form or another.

2. Ninety lavages were found to have acid fast organisms in either smear culture or guinea pig inoculation. This represents fifty-two children.

3. The inoculation of gastric sediment intracutaneously into the guinea pig proved a very satisfactory method and can be recommended. This gave a positive diagnosis in an average of twenty days.

4. The culture and guinea pig inoculation compared favorably; however, the incidence of positive cases was slightly higher in the guinea pig than the culture.

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ABSTRACTS

FOOD POISONING CAUSED BY HEMOLYTIC STAPHYLOCOCCI IN A DEFENSE PLANT: B. J. Slater & J. L. Morris, Am. Jr. Pub. Health, vol. 34, No. 8, Aug., '44, p. 854.

This article reports a food-poisoning outbreak at the Eastman Kodak Co. so severe that 49 patients were hospitalized. This outbreak differs from most in that corned beef, the incriminated food, prepared in a central kitchen for the noon meal, was distributed to five dining rooms and eaten without ill effects at that meal. The remaining meat was refrigerated at the individual dining rooms until the evening meal. The outbreak following the evening meal was traced to one of these dining rooms. Subsequent examination of the food handlers disclosed an infected, untreated laceration on one finger of one who had presumably handled this meat with a knife and fork. A hemolytic staphylococcus was isolated. Possibly refrigeration had also been inadequate. Daily inspection for skin infections in all food handlers is advocated.

FACTORS INFUENCING FALSE POSITIVE SEROLOGIC REACTIONS FOR SYPHILIS DUE TO SMALLPOX VACCINATION: G. O. Favorite, Am. Jr. Med. Sci., vol. 208, No. 2, Aug., '44, p. 216.

In a study of 202 individuals with negative serological tests previous to vaccination 24 gave positive reactions following vaccination. Most reactions were 2 plus or less but some were 4 plus. Further study indicated that an immune response to smallpox vaccination was apparently not a cause of false positives. The incidence of false positives among the group showing primary (non-immune) cutaneous reactions was at least 11-16%. These reactions appeared within 2 wks. of vaccination and generally disappeared with 2 mos. but some persist for 4 mos. Storing these sera at 4°C. for 7 mos. was of no value in differentiating false positives. Typhoid and tetanus toxoid immunizations did not appear to interfere with serological tests for syphilis.

ACUTE HEMOLYTIC ANEMIA WITH TOXIC HEPATITIS CAUSED BY SULFADIAZINE; REPORT OF A CASE: D. Donald & R. E. Wunsch, Ann. Int. Med., vol. 21, No. 4, Oct., '44, p. 709.

A case of left lower lobar pneumonia is described in which the sputum showed types III and V pneumococci. Sulfadiazine was administered, 59 g. in 8 days, with blood levels from 5.2 to 11.1. The blood count on admission was Hgb. 92%, RBC 4,450,000. The ninth day after sulfadiazine was begun the count was Hgb. 53%, RBC 2,666,000. Blood transfusions were given but difficulty was encountered. Patient was a IV but his serum agglutinated many IV donor cells. This led to the demonstration of cold agglutinins and auto-agglutinins. The hemoglobin was brought up to 77% and the RBC to 3,940,000. The patient was discharged.

COLD HEMAGGLUTININS IN INFECTIOUS MONONUCLEOSIS: C. L. Spingarn, J. P. Jones & B. Owrutzky, Nav. Med. Bull., vol. 43, No. 4, p. 717.

Serial dilutions of 0.1 cc. fresh blood serum were made up with normal saline to make 0.5 cc. per tube. Group O cells were washed three times and a 2% suspension prepared. 0.2 cc. were added to each tube, the tubes were shaken and refrigerated at 5°C. 18 hrs. In sera showing agglutination the cell suspensions were incubated 1 hr. at 37°C. The test was also carried out using sheep cells.

This report demonstrates the presence in high titre of cold hemagglutinins in infectious mononucleosis. The suggestion is made that these reactions are due to an increase in concentration of substances normally present in serum. These may be related to the tissues involved in the infectious condition.

GRAMICIDIN S AND ITS USE IN THE TREATMENT OF INFECTED WOUNDS: G. F. Gause & M. G. Brazhnikova, War Med., vol. 6, No. 3, Sept., '44, p. 180.

Gramicidin S was obtained in crystalline form from a Russian soil strain of Bacillus brevis. It was shown to be 4 times as effective as tyrothricin against staphylococci but only approximately ¼ as effective against streptococci and pneumococci. It was also effective against Cl. welchii. Clinical application in 573 cases of septic gunshot wounds, empyema or osteomyelitis showed it to be very satisfactory in clearing up infections.

LABORATORY TESTS IN THE STUDY OF JAUNDICE: E. W. Townsend, Sou. Med. Jr., vol. 37, No. 10, Oct., '44, p. 551.

The following outline for laboratory work in jaundice cases is suggested:

1. Diagnostic tests
2. Tests for liver function including
   (a) Bile pigment excretion and blood bilirubin determinations.
   (b) Fractional serum proteins and when indicated the response to protein administration.
   (c) Two or more of the following tests selected according to their adaptability to the case and the available facilities:
      (1) Intravenous modification of the hippuric acid test.
      (2) Duodeno-biliary drainage.
      (3) Dye excretion.
      (4) Prothrombin time and therapeutic response.
      (5) Cephalin-cholesterol flocculation.
      (6) Galactose clearance.

The principles of these tests are outlined, the normals and approximate cost are given.

PRELIMINARY NOTE ON A METHOD FOR THE RAPID EXAMINATION OF ENDOMETRIUM: C. D. Ball & G. S. McClellan. Sou. Med. Jr., vol. 37, No. 11, Nov., '44, p. 640.

This method permits microscopic observation a few minutes after removal and is sufficiently satisfactory for determining the endometrial phase. The biopsy material is placed between 2 slides. These are compressed firmly and then pulled apart leaving bits of the flattened tissue on the slides. Fixation is by immersion in 70% alcohol containing 5 drops glacial acetic acid per 100 cc. The time of application is not specified. The tissue is stained with hematoxylin and eosin, cleared and mounted. Slides are permanent.

INFECTIOUS MONONUCLEOSIS OF UNUSUAL SEVERITY WITH REVIEW OF JAUNDICE CASES OCCURRING IN THIS DISEASE: W. P. Boger, Sou. Med. Jr., vol. 37, No. 10, Oct., '44. p. 546.

This case was especially misleading because the acute symptoms

occurred 2½ mos. after the generalized lymphadenopathy. In its acute stage it resembled typhoid fever. The temperature reached 105.2°. There was also a pertussis-like cough producing blood-streaked sputum. The icterus index rose to 50 with increasing yellow discoloration of the skin. The author states the case would not have been diagnosed without the heterophile agglutination.

SPONTANEOUS SPLENIC RUPTURE IN INFECTIOUS MONONUCLEOSIS: A Case and Pathological Report: W. Darley, W. C. Black, C. Smith & F. A. Good, Am. Jr. Med. Sci., vol. 208, No. 3, Sept., '44, p. 381.

For the first eleven days this case was apparently like other infectious mononucleosis. About this time he was hospitalized with abdominal pain and jaundice. Six days later he suffered an acute pain and went into shock. Laparotomy disclosed a ruptured spleen with a 4 cm. tear. Microscopic examination showed an increase in the lymphoid elements and an atypical cell resembling the cells found in the peripheral blood in this condition. The patient recovered.

USE OF GELATIN SOLUTIONS IN THE TREATMENT OF HUMAN SHOCK: D. D. Kozoll, H. Popper, F. Steigmann & B. W. Volk, Am. Jr. Med. Sci., vol. 208, No. 2, Aug., '44, p. 141.

Fifty-two cases of shock were each given 1000 cc. 5% gelatin in normal saline. No undesirable results were obtained. An increase in sedimentation rate due to rouleaux formation generally observed on injection of macromolecular solutions might be a disadvantage when the circulating RBC have already been decreased by hemorrhage. In this series this apparently did not influence the clinical picture. Gelatin may be considered a good substitute for plasma in shock.

EOSINOPHIL LEUKEMIA, WITH REPORT OF A CASE: M. Friedman, I. J. Wolman & H. H. Tyner, Am. Jr. Med. Sci., vol. 208, No. 3, Sept., '44, p. 333.

Patient was a colored boy 11 yrs. old. The clinical and necropsy observations are given in detail. Leukocytosis up to 194,000 with 80-90% eosinophils most of which were mature was observed. Both mature and immature eosinophiles were markedly increased in bone marrow studies made after death.

BURN TRAUMA PRECIPITATING ACUTE LEUKEMIA OR A LEUKEMOID CONDITION: D. Weiss & K. E. Haines, Am. Jr. Med. Sci., vol. 208, No. 4, Oct., '44, p. 490.

Evidence is cited for considering acute leukemia as of infectious rather than neoplastic origin. The case presented is that of a man who had been in the army 1½ yrs. without record of hospitalization who was now admitted with severe burns received when a gasoline field stove exploded. At the time of admission his blood count was normal. On the 8th day the blood count showed decided leukemic changes in spite of the good progress in his general condition. He rapidly became worse and died on the 13th day. Blood transfusions had been given without response. The last blood count taken showed WBC-137,000 with 4 myelocytes, 4 premyelocytes and 9 myeloblasts.

DIFFUSE GLOMERULONEPHRITIS FOLLOWING REVACCINATION FOR SMALLPOX: P. A. Herbut, Am. Jr. Path., vol. 20, No. 5, Sept., '44, p. 1011.

This patient, a man of 64 yrs., was vaccinated along with many other employees in a smallpox outbreak. Within 4 days he developed a rash and by the end of a week complained of severe pain in the back. This became worse and the patient was hospitalized in a semicomatose condition 29 days after vaccination. The findings were characteristic of glomerulonephritis. Patient died 37 days after vaccination.

The explanation advanced is a sensitivity to the protein of vaccine virus which had been given this man once before, 30 yrs. previously. Sensitivity to calf serum might also be considered because no steps were possible to rule it out.

STAPHYLOCOCCUS AND STREPTOCOCCUS CARRIERS AS SOURCES OF FOOD-BORNE OUTBREAKS IN WAR INDUSTRY: V. A. Getting, A. D. Rubenstein & G. E. Foley, Am. Jr. Pub. Health, vol. 34, No. 8, Aug., '44, p. 833.

These authors point out that although staphylococci and streptococci are common everywhere in the environment, it was possible in 13 of the 18 outbreaks studied to isolate identical strains from the infected food and from the nose and mouth of one of the persons

concerned in the preparation of that food. Three outbreaks were traced to alpha-streptococci.

Preventive measures suggested are those of proper personal hygiene of the food handlers such as keeping hands away from nose and mouth, covering mouth with handkerchief when coughing or sneezing and washing the hands thereafter. Food handlers with purulent wounds, boils or hand infections as well as those with sore throats should be eliminated.

GLYCOSURIA IN MENINGITIS: F. Ferguson & D. Barr, Ann. Int. Med., vol. 21, No. 2, Aug., '44, p. 173.

That glycosuria frequently accompanies the onset of meningitis is shown by its appearance in 16 of 72 consecutive cases with one-third of the meningococcic type affected. Ketosis, hyperglycemia and decreased tolerance of sugar also occurred in some instances. Glycosuria usually disappeared by the third day.

It is pointed out that patients in coma showing glycosuria and ketosis might easily be diagnosed as diabetic and thus not be given anti-meningitic treatment early enough.

SERUM IRON IN HEALTH AND DISEASE: J. F. Powell, Quart. Jr. Med., vol. 13, No. 49, Jan., '44, p. 19.

The method applied converts all the iron in the protein-free filtrate to the ferric state and then determines it by reaction with thiocyanate. The technique is described in detail. Mean values for serum iron for 28 normal women showed menstrual periodicity. Small doses of iron were much more effective when ascorbic acid was administered at the same time. A small group of vitamin C deficient males showed normal serum-iron values, but, one patient with clinical scurvy showed a very low iron level.

THE ONSET OF DIABETES DURING INFECTION: A CASE REPORT: H. J. John, Sou. Med. Jr., vol. 37, No. 11, Nov., '44, p. 625.

The patient was hospitalized with acute atypical pneumonia involving all lobes of the lungs. There was no familial history of

diabetes. Glycosuria appeared on the 9th day when the patient was already showing signs of improvement. Blood sugar was 153 mgs. Insulin was given in increasing amounts until the patient was getting 40 units daily. As the patient improved the insulin was reduced. Approximately 8 wks. after appearance of sugar insulin was discontinued. A glucose tolerance test done 17 days later was normal.

The questions raised are: "Could the toxemia of pneumonia have caused hepatitis with a reduction of the storage of glycogen in the liver and resultant hyperglycemia?" or "Is it conceivable that the toxemia of such an illness could reduce the efficiency of the insulin produced by the pancreas so that hyperglycemia might result?"

These questions are not answerable but from a practical point of view it is well to control the hyperglycemia which, if allowed to continue, causes destruction of the islets of Langerhans and brings about a permanent diabetes.

AN UNUSUAL SOURCE OF ERROR IN BASAL METABOLISM DETERMINATION: L. J. Warshaw, N. Y. State Jr. Med., vol. 45, No. 1, Jan., '45, p. 83.

This patient on admission showed slight malaise, weakness and loss of 30 lbs. Laboratory findings were negligible except for a cholesterol of only 100. When a pulse rate of 90-100 was subsequently observed, a BMR was done. Readings were plus 198 and plus 201. Apparatus was completely overhauled and tests repeated with readings of plus 142 and plus 152. No explanation for these was found but, they clearly did not fit the case. However, since it seemed as if the patient might have a slight hyperthyroidism, he was given Lugol's solution, 10 mgs. t.i.d. This resulted in slight clinical improvement but no gain in weight. BMR was now plus 48 and plus 50.

As it was thought that a perforated tympanic membrane might be responsible, the right external auditory canal was packed with cotton soaked in mineral oil. Readings of plus 10 and plus 21 were obtained. It was found that the readings could be wilfully varied over a wide range by varying the packing but leaving the apparatus in place.

TORULA INFECTION OF THE CENTRAL NERVOUS SYSTEM: C. T. Champion de Crespigny, Med. Jr. Australia, vol. II, No. 24, Dec., '44, p. 605.

The author sketches the history of infections with yeast or yeast-like organisms and gives in detail descriptions of two cases of his own. There are also several illustrations. In the spinal fluid the organism may be demonstrated by the use of India ink, if not readily evident. If direct microscopic examinations are negative, the organisms may easily be cultivated. Other characteristics of the spinal fluid are: chlorides usually approximately 650 mg.%, glucose, reduced or absent, lymphocytes predominating and varying from 20 per cmm. to over 100 per cmm. On centrifuging, the supernatant fluid becomes clear and may vary from colorless to light yellow. The sediment will form a solid plug as white as plaster of Paris.

TRANSITORY LUNG INFILTRATIONS ACCOMPANIED BY EOSINOPHILIA: H. Miller, New Eng. Jr. Med., vol. 232, No. 1, Jan., '45, p. 7.

This is a detailed report of a case which was ultimately classified as Loeffler's syndrome. During the first 2 mos. of observation, the patient showed an eosinophilia ranging between 64-85%. Very many and various examinations for parasites as well as tests with 24 common allergens were all negative. Treatment with Mapharsen was begun at the beginning of the third month and after a month of this the eosinophiles dropped to 2 and X-ray and clinical findings were sufficiently negative for dismissal.

THOICYANATE THERAPY OF HYPERTENSION: A. Koffer, A. W. Freireich and I. J. Silverman, Am. Heart Jr., vol. 25, No. 4, Oct., '44, p. 411.

This study was based on 39 patients attending an ambulatory cardiac clinic. It was found necessary to determine blood thiocyanate levels frequently because some individuals maintained high levels on small doses and vice versa. It was also found that the level remained fairly constant through the day regardless of the time of administration of the drug. A group of 6 was studied for relationship of intake of thiocyanate or of blood level to urinary output. Marked variation in output was evident. It is suggested that there are other excretory routes for this substance.

THE RELATIONSHIP OF BLOOD VISCOSITY TO THE INTENSITY OF HEART MURMURS: S. Garb, Am. Heart Jr., vol. 28, No. 5, Nov., '44, p. 568.

The apparatus used was a modification of the Wigger's circulation machine. It is described in detail and shown in diagram. Bank blood was used and the concentration of cells and plasma varied to give various viscosities. A stethescope or microphone was fitted in so that sounds produced might be recorded.

When the Hgb. was 140% and the RBC 6,900,000 no murmur was detected. With the Hgb. 120%, a faint murmur was found. This increased in volume until a Hgb. of 70% was reached. Beyond this no greater intensity was observed.

These observations may explain the hemic murmur and may also indicate that absence of a murmur in the presence of high viscosity may not mean absence of cardiac structural defects.

INFECTIOUS MONONUCLEOSIS. STUDY OF 29 CASES: Capt. W. H. Walker, Bull. U. S. Army Med. Dept., No. 63, Dec., '44, p. 80.

Of the 29 cases described only 3 were correctly diagnosed on admission. The 2 diagnostic laboratory characteristics are the atypical lymphocyte and the heterophile antibody test. However, the characteristic atypical lymphocyte has also been found in apparently normal patients, in lymphatic leukemia and in some infections. Normal sera may also show some heterophile agglutination. Positive reactions in dilutions of 1:64 or more are usually characteristic of infectious mononucleosis, serum therapy or serum sickness.

This sereis of observations showed that the atypical lymphocyte appears in the first 2 wks. of illness but usually not in profusion until the 5th to 7th day of illness. The sheep cell agglutinins rise rapidly and usually reach a peak in the first week or two of illness. They may also disappear rapidly. To establish a definite diagnosis it is recommended that the test be done three times weekly from the end of the first to the fifth weeks.

BOOK REVIEWS

THE MARIHUANA PROBLEM IN THE CITY OF NEW YORK: By the Mayor's Committee on Marihuana. The Jacques Cattel Press, Lancaster, Pa., 1944. Pp. 220. Price $2.50.

Mayor La Guardia of the City of New York appointed a Committee in 1938 to study the public health problem of marihuana. These investigators composed of representatives from the medical and legal professions, police department, penal institutions and educators divided themselves into groups and were assigned various medical and social phases for study.

The reports of the aforementioned Committees have been organized and published in 1944 under the above title. The presentations are compiled in an informative manner such as scientific data should be, hence methods of study and results become readily available.

This survey developed several amazing facts, most of them contrary to the popular concepts about the use and users of the drug. It was found that meeting places for indulgence are maintained in Harlem, but rarely elsewhere in New York City. Peddlers or guides may serve these places. Boisterous reaction and belligerence among smokers was the exception. The effect of the drug was a sense of feeling "high", a reaction that seemed to vary with the individual. Interestingly enough the confirmed smoker voluntarily gives up the drug without any craving or manifestations of withdrawal symptoms.

Most surprising are the findings that the use of marihuana while harmful, was not common in school children, had little effect on I. Q. in the user, did not contribute to sex delinquency, nor was it found to be associated with the commission of crime. There is much more about the medical and sociologic aspects as well as extensive chemical and pharmacologic data on the drug. Anyone interested can read this book with profit.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY: By D. Wright Wilson, Benjamin Rush Professor of Physiological Chemistry, University of Pennsylvania. Fifth Edition, The Williams & Wilkins Company, 1944. Pp. 262. Price $2.50.

This is the fifth edition of a popular manual of physiological chemistry first published in 1928. It still retains its character as a teaching guide to students and technicians rather than as a comprehensive treatise on the subject.

The text is divided into two sections: Introduction to the nature of inorganic substances, standards, electrolytic dissociation and properties of and test for carbohydrates, proteins and fats.

The second section deals with chemical standards and tests for body tissues and fluids with the essential descriptions of their normal and pathologic states. A table of logarithms, and abridged table of atomic weights and an adequate index complete the text. The descriptions are clear, concise with references to original descriptions where and when pertinent. Printing is on one side of the sheet only to provide space for notations and collected data.

AIDS TO CLINICAL PATHOLOGY: By David Haler, M.B., B.S. (Hons.) Lond., D.C.P. London. Hon. Pathologist, All Saints' Hospital, London; and Pathologist, Emergency Medical Service; Member of L. C. C. Panel of Special Pathologists; etc. The Williams & Wilkins Company, Baltimore, Maryland, 1944. Pp. 358.

This book is a combination of two others: "Aids to Pathological Techniques" and "Aids to Practical Pathology" in which the author asserts he has attempted to maintain the good points of both volumes.

The three hundred fifty odd pages suggest a large text but being pocket size, fairly large type and well sub-divided result in fulfilling the requirements of a ready reference manual rather than an exhaustive text book.

The subject matter is treated in eight sections under fifty-four separate chapters. Post-mortem technic, hematology, cytology, bacteriology, serology, parasitology, histology and biochemistry comprise the main sections. Procedures are described briefly with alternative methods for most estimations. In the hematologic sec-

tion only hemoglobinometry, hemocytometry, staining methods and special studies in qualitative and quantitative estimates of blood examination such as sedimentation rate, platelet count, oxidase reaction, etc., are given.

There is an appendix covering blood grouping, aphorisms, blood pictures, tables of standard solutions and various special examinations, which with an adequate index complete an informative, well selected and logically arranged handy manual on clinical pathology suitable for student, technician and physician. The only objection might be that the British terminology does not always coincide with the modern American style and selected apparatus specifies that of British rather than domestic manufacture.

NEWS AND ANNOUNCEMENTS

NEWS FROM THE EXECUTIVE OFFICE OF THE ASMT

The Board of Directors, following the example of the AMA and the ASCP, and the advice of the ODT, voted that a convention of the House of Delegates not be held in 1945. We hope that a meeting will be feasible in 1946. There will be a meeting of the Board of Directors, however, with the time and place to be determined later. Please submit any matters you would like to have discussed at this meeting to the Executive Office by May 1.

Scientific papers that were to be given at the convention are to be sent to the Chairman of the Program Committee at the designated time. She in turn will submit them to the Awards Committee. Awards will be made as follows:

1st place, $75.00 in War Bonds.

2nd place, $50.00 War Bond.

3rd place $25.00 War Bond.

Since the printing of the Roster in the January issue of the Journal, approximately 100 new members have joined the Society.

ZONE NUMBERS URGENTLY REQUIRED

We have been notified by Postmasters of various cities which employ the zoning system that many of our Journals are incompletely addressed due to the lack of zone numbers. Therefore, at any time you may submit to us your correct address, please include your zone number so that we may cooperate fully with this program.

CONVENTION PROGRAM

Although a convention will not be held this year we will present a program through the Journal. Prizes will be awarded the three best

papers. Be sure your group is represented.

FOUR copies of your paper must reach the Chairman of the Program Committee not later than MAY FIRST.

Send your papers and any questions to

Mabel O. Stewart, M.T. (ASCP)
4200 East 9th Avenue
Denver 7, Colorado

NOTICE

It has come to our attention that the WAC program for enrolling trainees for laboratory work has been discontinued. Those who had already begun their training will follow it through to completion, but no more applications for untrained persons are being accepted. This will serve to relieve us of the fear that our profession will be swamped with unqualified and partly trained laboratory workers, but at the same time, it places a greater responsibility upon the trained Medical Technologist to be sure that he does his part to fill the places where he is needed, whether that be in the service hospitals or in civilian life.

STATE AND LOCAL SOCIETIES

Colorado

"New Standards for Basal Metabolism" was discussed at the March meeting which was held at Children's Hospital in Denver. The April meeting will be sponsored by the staff of Fitzsimons General Hospital. Our annual convention will be held at the Cosmopolitan Hotel in Denver, May 27.

Minnesota

The Board of Directors of the Minnesota Society of Medical Technologists convened in the Medical Library of the St. Joseph's Hospital in St. Paul, February 7, 1945. The following members were present: Chauncey Winbigler, St. Paul; Dorothy Schommer, St. Paul; Martha Strolberg, Minneapolis; Fern Wagner, Minneapolis; Esther Wilbrecht, New Ulm; Thelma Erickson, St. Paul; Eleanor Egelston, Minneapolis; Frieda H. Claussen, St. Paul; Marion Polasky, Duluth; and Sr. M. Alcuin, OSB, Duluth.

The group decided that in the event that The Minnesota Hospital Association did not have an annual convention the Technologists would meet May 6, 1945, in the Twin Cities and have one day of business and scientific programs.

Thought was directed toward establishing funds for the professional benefit of the individuals in the society.

There are now 159 active members in the Minnesota Society of Medical Technologists which consists only of registered Medical Technologists (ASCP).

Frieda H. Claussen is to address the Arrowhead Society of Medical Technologists at the College of St. Scholastica, Duluth, on the afternoon of March 3, 1945. The students of the college registered in medical technology are sponsoring a tea on this occasion

to honor Miss Claussen. The topic of Miss Claussen's talk is "The Responsibilities of a Career Girl", with the emphasis on the career of medical technology.

Submitted by Sr. M. Alcuin, OSB.

INDIANAPOLIS SOCIETY OF MEDICAL TECHNOLOGISTS

Affiliated with
American Society of Medical Technologists
1944-'45
Regular Meetings: Monthly (Second Tuesday)

OFFICERS

Nila Maze, M.T. (ASCP).....President
Kathryn Mayer Lynn, M.T. (ASCP).....Vice-President
Ruth E. Trotter, M.T. (ASCP).....Secretary-Treasurer
651 East Drive, Woodruff Place, Indianapolis, Ind.

Tentative Program:

March: The Society (Ind. S. M. T.) is to be entertained at Fort Harrison by the Technicians Training School. The speaker and his subject to be announced at a later date.

April: Subject, "Bacteriology".
Speaker: Dr. Weed, Dept. of Bacteriology, Indiana University Medical School.

May: Subject: "Medical Travels".
Speaker: Dr. Kenneth Kohlstadt.

June: Annual business meeting, election of officers, committee reports and etc.

Past programs of the Indianapolis Society of Medical Technologists have been varied and appropriate.

At the September meeting Dr. Franklin B. Peck of the Lilly Medical Department at the Indianapolis City Hospital presented "Diabetes Mellitus, Its History, Clinical Manifestations, Laboratory Tests and Their Interpretation."

In October, Dr. C. C. Scott of the Lilly Pharmocology Department discussed "Shock, Its Cause and Treatment."

Lt. Col. Paul Ivins of Wakeman General Hospital at Camp Atterbury, Indiana, enlightened the November meeting attendants as to the "Laboratory Diagnosis of Tropical Diseases."

The Christmas Party was shared with the guests from the WAC Sanitary Corps stationed at Fort Benjamin, at Harrison, Ind.

January, 1945, brought out Dr. Allen Harcourt, a specialist in the treatment of burns.

The February meeting met Dr. K. G. Wakim, Head of the Department of Physiology at Indiana University Medical School at Bloomington and Indianapolis with the interesting title "Practical Medical Experience Among the Bedouin Nomads."

RUTH E. TROTTER, M.T. (ASCP)
Secretary-Treasurer

WORCESTER DISTRICT MEDICAL TECHNOLOGISTS ASSOCIATION

Affiliation applied for with
American Society of Medical Technologists
1944-'45
Regular Meetings: Monthly (Third Thursday)

OFFICERS

Marjorie Inman, M.T. (ASCP).....President
Ellen A. O'Hara, M.T. (ASCP).....Vice-President
Elfrieda M. Klaucke, M.T. (ASCP).....Treasurer
Jane C. Zalesda, M.T. (ASCP).....Secretary
16 Montrose Street, Worcester, Massachusetts

Past programs of the Worcester District Medical Technologists Association have been as follows:

September, 1944—A film on "Allergy". Miss G. Gillette, State bacteriologist spoke on "Approval of Laboratories."

November—Miss Geneva Daland from the Boston Hospital was guest speaker. Her informative and illustrated topic was "What We Can Learn From Blood Smears."

December—Social.

January, 1945—Captain M. F. Vidoli, Chief of Lab. Staff at Lovell General Hospital, Fort Devens, spoke to the members.

February—Alan Mather, Ph.D. Subject: "Chemistry."

PSYCHO-PHANTASTIC PHENOMENA

The world is full of startling sights
  Like ladies' hats today,
But wait 'til you see a thrombocyte
  Pitching new-mown hay.

It's odd how metamyelocytes
  Behave in rainy weather,
And how the wintry myeloblasts
  Make them huddle up together.

Spherocytes make lovely pets
  And never bite a neighbor,
But monocytes are treacherous
  And won't return a favor.

In purely myelophthisic terms
  A loaded gun could kill ya,
Unless, of course, you're shielded by
  Polychromatophilia.

A gazilli bird is known to sing
  The hypochromatic scales,
But only on the fourth of March
  In certain parts of Wales.

They tell us that fresh Brussels sprouts
  Garnished with leukemia
Will counteract the ravages
  Of hang-nails and anemia.

My penicillin's running dry,
  My hypochondrium's loose.
I guess I'd better take a shot
  Of fresh phlebitis juice.

CAL WHITNEY
Roselle, Ill. — 1944.

Name of State or Local Society	A.S.M.T. Affiliation	Meetings	Secretary's address
Caddo Parish Society of M. T. 1944-'45 Pres.—Eola Kendrick	non-aff.	monthly	Harriet Cypert, M.T. 179½ Fremont Street Shreveport 67, La.
California Association of M. L. T. (Santa Barbara Chapter) 1943-'44 Pres.—Grace P. Butera	non-aff.	monthly	Florence Connelly, M.T. 317 West Pueblo Str. Santa Barbara, Calif.
Chicago Society of M. T. 1944-'45 Pres.—Dorothy Laestar	aff.	monthly	Ada Meloy, M.T. 1575 Florence Ave. Evanston, Ill.
Colorado Society of M. T. 1944-'45 Pres.—Mabel O. Stewart	aff.	monthly	Annalee Breslford, M.T. 1560 High Street Denver, Colorado
District of Columbia Society of M. T. 1943-'44 Pres.—Zanerian E. Funk	aff.	monthly	Evelyn F. Ballou, M.T. 4105 Third Street N. W. Washington, D. C.
Illinois Society of Clinical L. T. 1944-'45 Pres.—Fannie Warnock	aff.	semi-ann.	Edna H. Murmann, M.T. 3924 N. Monticello Ave. Chicago, Ill.
Indiana State Society of M. T. 1944-'45 Pres.—Virginia Sue Alley	aff.	annual	Hazel M. Childs, M.T. Indianapolis City Hosp. Indianapolis, Ind.
Indianapolis Society of M. T 1944-'45 Pres.—Nila Maze	aff.	monthly	Ruth Trotter, M.T. 615 East Dr., Woodford Indianapolis, Ind.
Inland Empire Society of M. T. 1943-'44 Pres.—Frances Premo	non-aff.	annual	Lenore De Vor East 547 Gordon Spokane, Wash.
Little Rock Society of M. T. 1943-'44 Pres.—Marcella Drilling	non-aff.	quart.	Lila Church 2116 Orange Street Little Rock, Ark.
Minnesota Society of M. T. 1944-'45 Pres.—Mr. Chauncey Winbigler	aff.	annual	Thelma Erickson, M.T. 1211 East 4th Street St. Paul 6, Minn.
Nebraska Society of M. T. 1943-'44 Pres.—Romona Forbes	aff.	annual	Marjorie Lundeen, M.T. Lincoln General Hospital Lincoln, Nebraska
New Hampshire Society of M. T. 1943-'44 Pres.—Sister Marie-Rose (Larivee)	non-aff.	annual	Marion P. MacMartin, M.T. Mary Hitchcock Mem. Hosp. Hanover, N. H.

Name of State or Local Society	A.S.M.T. Affiliation	Meetings	Secretary's address
...gara Frontier Association of M. T.			Mrs. Angela Auer, M.T.
1943-'44	aff.	monthly	16 Duerstein Ave.
...s.—Wilma Riehle			Buffalo, N. Y.
...o Society of M. T. (Akron)			Mary Benedict Clark, M.T.
1943-'44	aff.	annual	Nichols General Hosp.
...s.—Kathryn Teeple			Louisville, Ky.
...o Society of Clinical L. T. Dist. #1			Patricia Nelan, M.T.
1944	non-aff.	semi-ann.	c/o City Hospital
...s.—Jean Jones			Akron, Ohio
...lahoma Society of M. T.			Leilla Woodworth, M.T.
1944	aff.	semi-ann.	604 S. Cincinnati
...s.—Marie Clark			Tulsa 3, Okla.
...aha-Council Bluffs Society of M. T.			Josephine Benal, M.T.
1943-'44	non-aff.	bi-mo.	City Health Dept.
...s.—Kathern Belle Forest			City Hall, Omaha, Nebr.
...nsylvania Society of M. T.			Anne Caverly, M.T.
1944-'45	aff.	monthly	5000 Pulaski Avenue
...s.—Ellen Marie McDevitt			Philadelphia 44, Penna.
...annah Society of M. T.			Jurelle S. Hooper, M.T.
1943-'44	aff.	monthly	20 East 56th Street
...s.—Sadie Cartwright			Savannah, Ga.
...sa Round Table of M. T.			Lythene Vermillion, M.T.
1944	non-aff.	bi-mo.	Hillcrest Memorial Hosp.
...s.—Oscar Stewart			Tulsa, Okla.
...sconsin Association of M. T.			Mrs. Elizabeth Kullman, M.T.
1943-'44	aff.	semi-ann.	2460 South 59th Street
...s.—Alice A. Thorngate			Milwaukee 14, Wisc.
...sconsin Association of M. T.			Esther Lemont, M.T.
Milwaukee District, 1943-'44	non-aff.	monthly	2618 North Summit Ave.
...s.—Dorothy Zoeller			Milwaukee 11, Wisc.

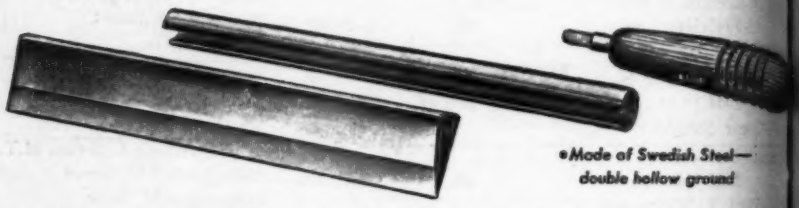
(aff.—affiliated with A. S. M. T.)
(non-aff.—not affiliated with A. S. M. T.)
...y: (semi-ann.—semi-annual)
(bi-mo.—bi-monthly)
(quart.—quarterly meetings)

CECELIA M. KORTUEM, R.N., M.T. (ASCP)
Editorial Staff
American Journal of Medical Technology

THE REGISTRY OF MEDICAL TECHNOLOGISTS
of the
AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS
Ball Memorial Hospital
Muncie, Indiana

The Board of Registry has been pleased to hear of the recruiting for students in the field of Medical Technology being done by many of the registrants. But there are still thousands of young people who have not heard of Medical Technology and the Registry. Many of them are planning their careers now. You can help them and assist the Board in its recruitment program by pointing out what the Registry considers the necessary background for a well-qualified Medical Technologist.

If there is a Career Conference in your local High School or College, try to make arrangements to have a group meeting for students who might be interested in this field of work. There are attractive publicity pamphlets available at the Registry office, useful in stimulating an interest in this work. Booklets of information, lists of approved schools, and pertinent reprints are also available. If you can also arrange for time on your local radio station, you will have an opportunity to reach still more possible recruits. A script already prepared for this purpose can be obtained from the Registry office.



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double hollow ground

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This new series of Aloe microtome knives combine the most advanced developments in the manufacture of knives for accurate, rapid sectioning. Their construction provides a well balanced knife that will maintain a uniform cutting edge under all conditions.

Aloe knives are individually made of fine Swedish steel, tempered throughout. Edges are double hollow ground to give the knives proper balance. With this improved design the knife is honed more easily and holds a narrow bev edge much longer. All sizes are used in ge work, but Size C is especially recommended bone and soft sections and Size D for h celloidin sections.

JL59900—Aloe Handmade Microtome Kn complete with back, handle and wood c

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Length, mm.	120	185	250	
Each.....	$20.00	$30.00	$44.00	$

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